Listing of the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

1. (currently amended) A method to selectively produce para-hydroxybenzoic acid in plant stem tissue comprising:
   a. growing a plant under suitable conditions, the plant comprising
      i. an endogenous source of para-coumaroyl-CoA; and
      ii. at least one 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) expression cassette comprising a nucleic acid molecule encoding a polypeptide having hydroxycinnamoyl CoA hydratase/lyase activity selected from the group consisting of SEQ ID NOs: 5, 58, 59, 60, 62, 63, and 64 operably linked to a tissue-specific promoter selected from the group consisting of SEQ ID NOs: 26, 43, 44, 45, 46, 49, 81, 82, and 83;~~a tissue-specific promoter isolated from a cellulose synthase gene encoding a protein involved in the formation of a cellulose synthesis catalytic complex, wherein said cellulose synthesis catalytic complex catalyzes cellulose synthesis in secondary cell wall formation in plant vascular tissue, said tissue-specific promoter operably linked to a nucleic acid molecule encoding a 4-hydroxycinnamoyl CoA hydratase/lyase enzyme~~
      ~~iii. a gene encoding a para-hydroxybenzoic acid UDP-glucosyltransferase;~~
   b. recovering unconjugated para-hydroxybenzoic acid and para-hydroxybenzoic acid glucoside from the plant;
   c. hydrolyzing para-hydroxybenzoic acid glucoside; and
   d. recovering unconjugated para-hydroxybenzoic acid.
2. (original) The method according to Claim 1 wherein the plant is selected from the group consisting of tobacco, *Arabidopsis,* sugar beet, sugar cane, soybean, rapeseed, sunflower, cotton, corn, alfalfa, wheat, barley, oats, sorghum, rice, canola, millet, beans, peas, rye, flax, and forage grasses.
3. Cancelled.
4. Cancelled.
5. (presently amended) A method according to Claim 1 wherein the HCHL expression cassette is ~~represented by~~ SEQ ID NO:30.
6. Cancelled.
7. Cancelled.
8. Cancelled.

9. (Presently amended) A method according to Claim ~~6~~ 1 wherein the nucleic acid molecule encoding HCHL encodes the polypeptide of SEQ ID 61.
10. Cancelled.
11. (Presently amended) A method according to Claim ~~8~~ 1 wherein the nucleic acid molecule encoding HCHL encodes the polypeptide of SEQ ID NO:6.
12. Cancelled.
13. Cancelled.
14. (Presently amended) A method according to Claim ~~13~~ 1 wherein the ~~gene encoding~~ the plant further comprises at least one nucleic acid molecule encoding a polypeptide having UDP-glucosyltransferase activity ~~enzyme having a nucleic acid sequence~~ selected from the group consisting of SEQ ID NO: 65, 66, and 67; wherein said at least one nucleic acid molecule is operably linked to a suitable regulatory sequence ~~whereby para-hydroxybenzoic acid glucose ester is selectively produced~~.
15. Cancelled.
16. (original) The method according to Claim 1 wherein the tissue-specific promoter of said HCHL expression cassette preferentially expresses active HCHL in said plant stem tissue at levels at least ten times higher than expression levels measured in leaf tissue of said plant.
17. (Presently amended) A method to selectively produce para-hydroxybenzoic acid in plant stem tissue comprising:
    a. providing a plant comprising
        i. an endogenous source of para-coumaroyl-CoA;
        ii. a 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) expression cassette comprising a tissue-specific promoter selected from the group consisting of SEQ ID NOs: 26, 43, 44, 45, 46, 49, 81, 82, and 83 operably linked to a nucleic acid molecule encoding a polypeptide having hydroxycinnamoyl CoA hydratase/lyase activity having an amino acid sequence SEQ ID NO: 61;~~isolated from a cellulose synthase gene encoding a protein involved in the formation of the cellulose synthesis catalytic complex, the tissue specific promoter operably linked to a nucleic acid molecule encoding a 4-hydroxycinnamoyl CoA hydratase/lyase enzyme from *Caulobacter crescentus* having at least 50% higher catalytic efficiency in converting para-hydroxycinnamoyl CoA to para-hydroxybenzoic acid in comparison to catalystic efficienty of an HCHL enzyme from *Psuedomonas putida* or *Pseudomonas fluorescens* expressed under similar conditions; wherein said~~

~~cellulose synthesis catalytic complex catalyzes cellulose synthesis in secondary cell wall formation in plant vascular tissue~~; and

~~iii. a gene encoding a para-hydroxybenzoic acid UDP-glucosyltransferase;~~

b. growing a plant under suitable conditions whereby unconjugated para-hydroxybenzoic acid and para-hydroxybenzoic acid glucosides are produced;

c. recovering unconjugated para-hydroxybenzoic acid and para-hydroxybenzoic acid glucoside from the plant;

d. hydrolyzing para-hydroxybenzoic acid glucoside; and

e. recovering unconjugated para-hydroxybenzoic acid.

18. Cancelled.

19. (original) The method according to Claim 17 wherein the plant is selected from the group consisting of tobacco, *Arabidopsis*, sugar beet, sugar cane, soybean, rapeseed, sunflower, cotton, corn, alfalfa, wheat, barley, oats, sorghum, rice, canola, millet, beans, peas, rye, flax, and forage grasses.

20. Cancelled.

21. Cancelled.

22. Cancelled.

23. (Presently amended) A method according to Claim ~~22~~ 17 wherein the plant further comprises at least one nucleic acid molecule encoding a polypeptide having UDP-glucosyltransferase activity ~~enzyme having a nucleic acid sequence~~ selected from the group consisting of SEQ ID NO: 65, 66, and 67; wherein said at least one nucleic acid molecule is operably linked to a suitable regulatory sequence ~~gene encoding para-hydroxybenzoic acid UDP-glucosyltransferase is recombinantly expressed in the plant whereby para-hydroxybenzoic acid glucose ester is selectively produced~~.

24. Cancelled.